

**Translation**

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>D68 PAT 1222 WO</b>	<b>FOR FURTHER ACTION</b>	See Form PCT/IPEA/416
International application No. <b>PCT/FR2004/000642</b>	International filing date (day/month/year) <b>16.03.2004</b>	Priority date (day/month/year) <b>09.04.2003</b>
International Patent Classification (IPC) or national classification and IPC		
Applicant <b>FOCAL-JMLAB (SA)</b>		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>11</u> sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising: a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows: <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items: <input checked="" type="checkbox"/> Box No. I Basis of the report <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

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Box No. I

Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-9 \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- nos. 1-16 \_\_\_\_\_ as originally filed/furnished
- nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- sheets 1/9-9/9 \_\_\_\_\_ as originally filed/furnished
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	7-11	YES
	Claims	1-6, 12-16	NO
Inventive step (IS)	Claims		YES
	Claims	1-16	NO
Industrial applicability (IA)	Claims	1-16	YES
	Claims		NO
2. Citations and explanations (Rule 70.7)			
1. Reference is made to the following documents:			
D1: DE 101 35 414 C (ROEHM GMBH & CO KG) 13 March 2003 (2003-03-13);			
D2: PATENT ABSTRACTS OF JAPAN vol. 010, no. 168 (E-411), 14 June 1986 (1986-06-14) & JP 61 019298 A (SANSUI DENKI KK), 28 January 1986 (1986-01-28);			
D3: FR-A-2 731 579 (FOCAL) 13 September 1996 (1996-09-13);			
D4: TAGUCHI S ET AL: "SANDWICH-CONSTRUCTION LOUDSPEAKER DIAPHRAGM WITH FOAMED HIGH-POLYMER AND CARBON FIBER" JOURNAL OF THE AUDIO ENGINEERING SOCIETY, AUDIO ENGINEERING SOCIETY. NEW YORK, US, vol. 34, no. 11, November 1986 (1986-11), pages 895-904, XP000796573 ISSN: 0004-7554;			
D5: DE 199 25 787 C (ROEHM GMBH) 21 December 2000 (2000-12-21).			

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## 2. Lack of novelty

The present application does not fulfil the requirements set forth in PCT Article 33 because the subject matter of claims 1-6 and 12-16 does not comply with the requirement of novelty defined in PCT Article 33(2).

### 2.1 Independent claim 1

Document D1 describes (the references between parentheses apply to said document):

- a loudspeaker diaphragm (paragraph 1)  
comprising:
  - a core (2 in figure 1 and paragraph 25) consisting of a structural foam cut very accurately and thermoformed to the shape desired for the diaphragm, wherein
  - the outer surface is covered with at least one, and preferably a plurality of, "outer plies" of optionally woven resin-impregnated fibres (3 in figure 1 and paragraph 48) forming a laminate or "outer skin", and
  - the inner surface is optionally covered with one or more "inner plies" of optionally woven resin-impregnated fibres forming a laminate or "inner skin" (the top black layer in figures 1-4 and paragraph 48).

For the sake of completeness, it should be noted

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that the subject matter of this claim is also described in documents D2-D5 (cf. D2: the top figure and "purpose"; D3, page 2, lines 20-26; page 3, lines 23-27; page 4, lines 11-30 and figure 2; D4, page 895, column 2, line 20 to page 896, column 1, line 17 and paragraphs 2.1 and 2.2; or D5, column 3, lines 24-32 and column 6, lines 35-59).

2.2 **Claim 2** discloses that the optionally woven fibres forming the inner and outer plies are selected from:

- glass fibres; and
- carbon, polyethylene, aramid and para-aramid fibres.

In this regard, see D1, paragraph 48; D2, "constitution"; D3, page 3, lines 23-27; D4, paragraph 2.1; or D5, column 6, lines 46-51.

2.3 **Claim 3** discloses that the foam that forms the core is a closed-cell plexiglass foam having a density of 30 to 100 kg/m<sup>3</sup>.

In this regard, see D1, paragraph 44, plexiglass is polyacrylimide; or D5, column 6, lines 26-29.

2.4 **Claim 4** discloses that the impregnation resin is selected from:

- thermosetting resins: epoxy, polyester, vinyl ester and phenolic resins; and
- thermoplastic resins: polyamide and

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polypropylene resins.

In this regard, see D1, paragraph 48, polyamide; D2, "constitution", epoxy; D3, page 4, lines 29-31, epoxy; or D4, paragraph 2.1, epoxy.

- 2.5 **Claim 5** discloses that it is possible to use different fibres and different impregnation resins or, on the contrary, identical fibres and identical resins, to produce the plies, or to use a combination of fibres and resin to produce the inner plies and an alternative or even the same combination to produce the outer plies.

With regard to the use of identical fibres and the same combinations, see D1, paragraphs 19, 25 and 26 and figures 1-4 or D3, page 4, lines 11-31.

- 2.6 **Claim 6** discloses that the same combination is used.

In this regard, see D1, paragraphs 19, 25 and 26 and figures 1-4 or D3, page 4, lines 11-31.

- 2.7 **Claim 12** discloses a method for producing a diaphragm as per any one of claims 1 to 11, which method is characterised in that said sandwich material is polymerised either via compression between a mould and a counter mould or via vacuum moulding, as carried out at a sufficient temperature to polymerise the resin and thereby arrive at a mechanically uniform structure.

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In this regard, see D1, paragraphs 25-27 and paragraph 48; D2, "constitution"; D3, page 4, lines 25-31; D4, paragraph 3; or D5, column 7, line 7-16.

- 2.8 **Claim 13** discloses loudspeaker diaphragms for loudspeaker cabinets, characterised in that they are produced by means of the method as per claim 12.

In this regard, see D1, paragraphs 12 and 53; D2, "purpose"; D3, page 4, lines 11-31; D4, paragraph 3; or D5, column 1, lines 3-7.

- 2.9 **Claim 14** discloses loudspeakers for loudspeaker cabinets, characterised in that they comprise a diaphragm as per any one of claims 1 to 11 and 13.

In this regard, see D1, paragraphs 12 or 53; D2, "purpose"; D3, page 3, lines 15-24 and figures 1 and 3; D4, the abstract and figure 15; or D5, column 1, lines 3-10.

- 2.10 **Claim 15** discloses loudspeaker cabinets characterised in that they are provided with at least one loudspeaker as per claim 14.

A cabinet is implicitly disclosed in the diaphragms as per documents D1-D5.

- 2.11 **Claim 16** discloses uses for diaphragms,

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loudspeakers and loudspeaker cabinets as per any one of claims 1 to 15, for sound reproduction, in particular, high or very high fidelity sound reproduction, for all private uses and all uses in entertainment, conference or concert halls, in motor vehicles or other ground transport vehicles, in sea or air transport crafts, or the like.

The use of diaphragms for sound reproduction is explicitly disclosed in the diaphragms as per documents D1-D5.

**3. Absence of inventive step**

Dependent claims 7-11 do not contain any features which, in combination with the features of any one of the claims to which they refer, might define subject matter that fulfils the PCT requirement of inventive step (PCT Article 33(3)).

**3.1 Claim 3** discloses that the foam that forms the core is a closed-cell plexiglass foam having a density of 30 to 100 kg/m<sup>3</sup>, and typically 50 kg/m<sup>3</sup>.

In this regard, see D1, paragraph 44, plexiglass is polyacrylimide or D5, column 6, lines 26-29.

No inventive step is involved in modifying the upper limit of the range when such a modification does not lead to an unexpected technical effect (cf. the PCT Guidelines, 13.14(e)(ii)).



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3.2	<p><b>Claim 7</b> discloses that the inner and outer plies and the thicknesses thereof are produced by cutting the material to various thicknesses ranging from 1.5 mm to 4 mm.</p> <p>In this regard, see D1, paragraphs 48 and 49 or D5, column 6, lines 54-56.</p> <p>No inventive step is involved in modifying slightly the limits of the range when such a modification does not lead to an unexpected technical effect (cf. the PCT Guidelines, 13.14(e)(ii)).</p> <p>3.3 <b>Claim 8</b> discloses that the diaphragm has a sandwich structure selected from the following:</p> <ul style="list-style-type: none"><li>- CWM-L or CWM-2P / M 1.5 1 glass inner ply, 1.5 mm-thick foam core, 1 glass outer ply;</li><li>- CWS-1 P/ M2 1 glass outer ply 2 mm-thick foam core; or</li><li>- CWS-1 P/ M3 1 glass outer ply, 3 mm-thick foam core.</li></ul> <p>In this regard, see D1, paragraphs 12, 45 and 49; or D5, column 6, lines 30-34 and 54-56.</p>

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No inventive step is involved in selecting specific values from a known range when such a selection does not lead to an unexpected technical effect (cf. the PCT Guidelines, 13.14(e)(ii)).

- 3.4 **Claim 9** discloses that the diaphragm is for bass and mid-range transducers with diameters ranging from 46 cm to 10 cm. No inventive step is involved in merely specifying parameters that fall within a standard range.

- 3.5 **Claim 10** discloses that the diaphragm is for a mid-range loudspeaker and is characterised in that it consists of a 1.5 mm-thick core having an outer skin of 100 microns produced using two 50-micron glass plies.

In this regard, see D1, paragraphs 12, 45 and 49; or D5, column 6, lines 30-34, lines 44-45 and lines 54-56.

Neither the selection of values from a known range, nor the selection of a certain number of elements (two glass plies) from a range of options ("mehrschitiger Aufbau", D1, page 6, line 1 and D2, column 6, line 45) involves an inventive step.

- 3.6 **Claim 11** discloses that the diaphragm is for a woofer having a diameter of 33 cm and that said diaphragm is characterised by a 33 mm-thick core that has an inner skin consisting of three

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50-micron plies and an outer skin consisting of two 50-micron plies.

In this regard, see D1, paragraphs 12, 45 and 49 or D5, column 6, lines 30-34, lines 44-45 and lines 54-56).

Neither the selection of values from a known range, nor the selection of a certain number of elements (a two-ply skin and a three-ply skin) from a range of options ("mehrschitiger Aufbau", D1, page 6, line 1 and D2, column 6, line 45) involves an inventive step.